



Solitary Cannabis Use during the COVID-19 Pandemic: Associations with Affect, Social Factors, and Pandemic-Related Stress



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BACKGROUND

- Cannabis use consequences appear to have risen since the start of the pandemic, especially among those who report greater fears and stress associated with the pandemic (Miller et al., 2021; Dumas et al., 2020)
- Overall cannabis use rates have not changed since the start of the COVID-19 pandemic, suggesting specific cannabis risk behaviors may have contributed to the rise in consequences
- Despite COVID-related increases in social isolation, little is known about how the social context of cannabis use (i.e., how much occurs alone) may be associated with affective and social factors as well as cannabis use consequences

STUDY AIMS

- This cross-sectional study aimed to
- **Aim 1:** explore independent differences in affective and social factors (depression, social anxiety, loneliness, and interpersonal sensitivity), pandemic stress, and cannabis consequences between past-month solitary users and majority social users
- **Aim 2:** assess associations of affective and social factors with solitary cannabis use frequency

Aim 1: Independent Differences between Solitary and non-Solitary Users

	Past-Month Solitary Cannabis Users (n = 49)	Social-Only or Non-Past Month Solitary Cannabis Users (n = 119)	Test Statistic	Effect Size
Age	18.69 (0.94)	18.65 (0.97)	t(165) = 0.252	d = 0.04
Sex (% male)	47%	49%	χ ² (1) = 0.068	Φ = 0.02
Depression	8.12 (6.38)	5.61 (5.73)	t(166) = 2.494*	d = 0.41
Social anxiety	6.39 (5.09)	5.44 (4.58)	t(166) = 1.184	d = 0.20
Loneliness	9.61 (5.31)	8.88 (4.46)	t(166) = 0.911	d = 0.21
Interpersonal sensitivity	7.00 (5.10)	4.56 (4.46)	t(166) = 3.087**	d = 0.51
COVID-19 stress	8.20 (2.95)	6.19 (3.02)	t(166) = 3.945***	d = 0.67
Cannabis consequences	6.24 (4.95)	1.39 (2.43)	B(166) = 0.82***	IRR = 2.28 (1.60, 3.25)

Note. N = 168. Significant differences between social-only/non-past month solitary and past-month solitary cannabis users are denoted in bold and with asterisks. Analyses for categorical variables (e.g., sex) were conducted with Pearson chi-squares; analyses for continuous variables (e.g., depression) were conducted using independent-samples t-tests; analyses for count variables (cannabis consequences) were conducted using zero-inflated negative binomial regression. For effect sizes, phi coefficients, Cohen's d, and incidence rate ratios are presented for chi-squares, t-tests, and zero-inflated negative binomial regression, respectively.
*p < .05, **p < .01, ***p < .001

Aim 2: Associations of Affective and Social Factors with Solitary Cannabis Use Frequency

As Compared to No Solitary Cannabis Use (n = 94)

	Past-year, no past-month solitary cannabis use (n = 22)	Past-month solitary cannabis use (n = 49)
	OR (95% CI)	OR (95% CI)
Age	1.27 (0.77, 2.10)	0.96 (0.63, 1.44)
Sex (versus female)	3.48 (1.11, 10.87)*	2.98 (1.22, 7.25)*
Depression	1.09 (0.98, 1.21)	1.07 (0.98, 1.16)
Social anxiety	1.06 (0.92, 1.23)	0.98 (0.88, 1.09)
Loneliness	0.88 (0.76, 1.01)	0.92 (0.82, 1.03)
Interpersonal sensitivity	0.90 (0.77, 1.06)	1.12 (1.00, 1.24)*
Pandemic-related stress	1.41 (1.15, 1.72)**	1.34 (1.15, 1.55)***

Note. N = 165. Significant results at p < .05 are denoted in bold font.
*p < .05, **p < .01, ***p < .001

METHOD

Participants & Procedure:

- N = 168 college students (M_{age} = 18.71 [SD = 0.99], 53% female, 67% White) aged 18-25 who reported past-year cannabis use completed anonymous online surveys

Measures

- **Solitary cannabis use frequency:** An item adapted from the Marijuana Smoking History Questionnaire assessed solitary cannabis use frequency (Bonn-Miller & Zvolensky, 2009).
- **Pandemic-related stress:** Selected items from the Pandemic Stress Index (Harkness et al., 2020), which were summed to create a total score of pandemic-related stress.
- **Cannabis consequences:** Brief Marijuana Consequences Questionnaire, a 21-item self-report measure of cannabis consequences (Simons et al., 2012).
- **Depression:** Patient Health Questionnaire-9, a 9-item self-report measure of depression symptoms (Kroenke et al., 2001)

- **Social anxiety:** Social Interaction Anxiety Scale-Short Form, a 6-item self-report assessment of social anxiety (Fergus et al., 2012)
- **Loneliness:** UCLA Loneliness Scale-8, an 8-item self-report measure of current perceived loneliness and social isolation (Hays & DiMatteo, 1987)
- **Interpersonal sensitivity:** Interpersonal sensitivity scale from the Hopkins Symptom Checklist (SCL-90; Derogatis et al., 1973)
- **Statistical Analyses:**
 - Aim 1: Independent-samples t-tests conducted in SPSS for affective/social factors; due to the high number of zeroes and the distribution of cannabis use consequences, zero-inflated negative binomial regression conducted in R
 - Aim 2: Multinomial logistic regression used to predict solitary cannabis use frequency (past year, past month; no solitary use as comparison)
 - Age and sex controlled for in all analyses

KEY FINDINGS

- **Aim 1:** Compared to exclusively or predominantly social use, past-month solitary cannabis use was independently associated with greater depression, interpersonal sensitivity, and pandemic-related stress. Likewise, compared to exclusively or predominantly social use, past-month solitary cannabis use was associated with greater cannabis consequences
- **Aim 2:** When all affect/social factors were entered into multinomial regression, male sex and greater pandemic stress associated with higher odds of either past-year (but no past-month) or past-month solitary cannabis use. Greater interpersonal sensitivity was associated with higher odds of past-month (but not past-year) solitary cannabis use.

DISCUSSION

- This study contributes to limited knowledge of college students' solitary cannabis use
- Findings build upon prior literature associating solitary cannabis use with social anxiety and cannabis use problems
- Findings further implicate interpersonal sensitivity and pandemic-related stress as a) risk factors and b) points for potential intervention to prevent or mitigate negative substance use consequences, thus improving overall health on college campuses
- Implications for future research include:
 - Further explore the role of interpersonal sensitivity in cannabis use across social contexts, especially given robust associations of cannabis use with social anxiety
 - Explore underlying risk factors which may increase cannabis users' susceptibility to environmental stress, in this case that posed by COVID-19